

What is claimed is:

1. A method of providing a metal seed layer substantially free of discontinuities disposed on a substrate comprising the step of contacting a metal seed layer disposed on a substrate with an alkaline copper electroplating bath comprising copper pyrophosphate.

2. The method of claim 1 wherein the electroplating bath has a pH of from 8 to 9.

3. The method of claim 1 wherein the electroplating bath further comprises a complexing agent.

4. The method of claim 1 wherein the electroplating bath further comprises one or more bases selected from ammonium hydroxide or tetra(C₁-C₄)alkylammonium hydroxide.

5. The method of claim 1 wherein the electroplating bath further comprises one or more compounds selected from halides, brighteners, suppressors, levelers, grain refiners, wetting agents or surfactants.

6. A method of manufacturing an electronic device comprising the step of contacting a metal seed layer disposed on a substrate with an alkaline copper electroplating bath comprising copper pyrophosphate.

7. The method of claim 6 wherein the electroplating bath has a pH of from 8 to 9.

8. The method of claim 6 wherein the electroplating bath further comprises a complexing agent.

9. The method of claim 6 wherein the electroplating bath further comprises one or more bases selected from ammonium hydroxide or tetra(C₁-C₄)alkylammonium hydroxide.

10. The method of claim 6 wherein the electroplating bath further comprises one or more brightener compounds in an amount of ≥ 1.5 mg/L.

11. An article of manufacture comprising an electronic device substrate containing one or more apertures, each aperture containing a seed layer deposit enhanced by contact with an alkaline electroplating composition that comprises copper pyrophosphate.

12. A method for removing excess material from a semiconductor wafer containing one or more apertures by using a chemical mechanical planarization process which comprises contacting the semiconductor wafer with a rotating polishing pad thereby removing the excess

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C1 7 material from the semiconductor wafer; wherein the apertures contain a seed layer deposit enhanced by contact with an alkaline electroplating composition that comprises copper pyrophosphate.

• 13. A method for removing excess material from a semiconductor wafer containing one or more apertures by using a chemical mechanical planarization process which comprises contacting the semiconductor wafer with a rotating polishing pad thereby removing the excess material from the semiconductor wafer; wherein the apertures contain a copper deposit obtained by contact with an alkaline electroplating composition that comprises copper pyrophosphate.

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